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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,324	10/07/2003	Ci Florence Luo	1857.2110000	2673

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EXAMINER

WHITESSELL GORDON, STEVEN H

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2851

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/679,324	Applicant(s) LUO ET AL.	
	Examiner Steven Hunt Whitesell-Gordon	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 18-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 23-25 and 30 is/are rejected.
- 7) ☒ Claim(s) 14-17, 26-29 and 31-33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/8/2004, 8/24/2007, 4/24/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Acknowledgment is made of Amendments made 7 October 2003 and 7 March 2005. Claim 7 and 23 are currently amended.

Election/Restrictions

2. Claims 18-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species B and C, there being no allowable generic or linking claim. Claims 1-17 and 23-33 were indicated by Applicant as reading on elected Species A. Election was made **without** traverse in the reply filed on 21 August 2008.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-13, 23 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki et al. [US 2001/0026355].

For claim 1, Aoki teaches a purge device for actively purging a pellicle volume (volume GS between pellicle PE and reticle R, see Figs. 3 and 7) enclosed within a reticle-pellicle assembly (reticle R, pellicle PE and frame PF see Figs. 3 and 7), the reticle-pellicle assembly having a reticle R, a pellicle PE, and a gas permeable pellicle frame PF (gas passing through frame shown in Figs. 3 and 7), the gas permeable pellicle frame PF supporting the pellicle PE at a standoff from the reticle R (distance

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between reticle R and Pellicle PE, see Figs. 3 and 7), the purge device comprising: a base 55 having a purge input interface (supply nozzle 74 and supply holes 73, Fig. 3) and a cavity (spaces inside chamber 55), wherein said cavity receives at least a portion of the reticle-pellicle assembly including a pellicle PE and the enclosed pellicle volume GS such that a first region (region in the vicinity of the supply nozzle 74 within the chamber 55, see Figs. 3 and 7) within the cavity is formed at the purge input interface, a second region (region in the vicinity of the exhaust nozzle 77 within the chamber 55, see Figs. 3 and 7) within the cavity is formed at a permeable side of the pellicle frame PF away from the first region, and a gap region (region formed between the pellicle PE and the surface of chamber 55) is formed between the pellicle and a surface of the cavity, and purging gas (nitrogen, helium and argon, see [0096]) sent through the purge input interface is kept at a higher pressure (gas supply device 70 inherently provides a high pressure in the first region in order to provide gas flow from the first region to the second region, see Fig. 3A) in the first region relative to the second region such that the purging gas flows through the enclosed pellicle volume GS and said gap region (arrows signifying flow of gas, see Figs. 3 and 7), whereby, a displacement force on the pellicle PE due to a pressure difference between purging gas in the enclosed volume and purging gas in the gap region is within a tolerance range of the pellicle PE (see [0099] and pellicle PE is shown flat and stable in Figs. 3 and 7).

For claim 2, Aoki teaches the base includes at least one support member (HB and loading system 57, see Fig 1 and Fig. 7) that supports the reticle-pellicle assembly.

For claim 3, Aoki teaches the base 55 includes at least one holding member (reticle loading arm, see [0154]) that holds (via vacuum, see [0154]) the reticle-pellicle assembly onto the base 55.

For claim 5 Aoki teaches the pellicle frame PF is permeable to gas and impermeable to particles (impermeable to particles to larger than holes h1-h4, see Fig. 3A).

For claim 6, Aoki teaches the pellicle frame PF includes at least two sides permeable to gas (sides with holes h1-h4, see Fig. 3A) arranged within said cavity such that at least one permeable side faces the first region and another permeable side faces the second region (see Figs. 3 and 7).

For claim 7, Aoki teaches the pellicle frame PF comprises: a first pair of opposing sides (sides with holes h1-h4, see Fig. 3A) permeable to gas and arranged within said cavity such that one permeable side of said first pair faces the first region and the other permeable side of said first pair faces the second region; and a second pair of opposing sides (sides other than the sides with holes h1-h4, see Fig. 3A) impermeable to gas and arranged within said cavity such that one permeable impermeable side of said second pair faces a first cavity wall between the first region and the second region and the other permeable impermeable side of said second pair faces a second cavity wall between the first region and the second region opposite said first cavity wall.

For claim 8, Aoki teaches the purging gas includes nitrogen and the pellicle frame is permeable to nitrogen (nitrogen, helium and argon, see [0096]).

For claim 9, Aoki teaches the purge input interface (supply nozzle 74 and supply holes 73, Fig. 3A) includes at least one port for passing the purging gas to the first region (see Figs. 3 and 7).

For claim 10, Aoki teaches a purge output interface (exhaust holes 76 and exhaust nozzle 77, see Fig. 3A) having at least one port for passing exhaust out of the purge device.

For claim 11, Aoki teaches the cavity comprises a rectangular volume within said base (see Fig. 3A).

For claim 12, Aoki teaches the first region is substantially enclosed by a permeable side of the pellicle frame PF, the purge input interface, a surface of the reticle R, a top surface of the base, and side walls of the cavity (region in vicinity of the supply nozzle is surrounded by reticle R, pellicle frame PF, pellicle PE and the walls of chamber 55, see Figs. 3 and 7).

For claim 13, Aoki teaches a flow barrier (walls of pellicle frame PF that face supply holes 76 and deflect the flow of gas around the pellicle frame PF, see Figs. 3 and 7) that keeps the flow of the purging gas within the first region before entering the pellicle volume GS.

For claim 23, Aoki teaches another flow barrier (reduced pressure in region in the vicinity of exhaust nozzles 77 and walls of pellicle frame PF that face exhaust holes 76, see Fig. 3) that seals the flow of the purging gas within the second region as it exits the pellicle volume and prevents inflows (the reduced pressure in the region and the

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walls of pellicle frame PF that face exhaust holes 76 both inherently prevent gas from flowing into the pellicle volume GS, see Fig. 3A), whereby, the second region can be kept at a very low pressure when coupled to vacuum 71.

For claim 30, Aoki teaches a purge device for actively purging a pellicle volume (volume GS between pellicle PE and reticle R, see Figs. 3 and 7) enclosed within a reticle-pellicle assembly (reticle R, pellicle PE and frame PF see Figs. 3 and 7), the reticle-pellicle assembly having a reticle R, a pellicle PE, and a gas permeable pellicle frame PF (gas passing through frame shown in Figs. 3 and 7), the gas permeable pellicle frame PF supporting the pellicle PE at a standoff from the reticle R (distance between reticle R and Pellicle PE, see Figs. 3 and 7), the purge device comprising: a base 55 having a cavity (spaces inside chamber 55) formed therein, wherein said cavity receives at least a portion of the reticle-pellicle assembly including a pellicle PE and the enclosed pellicle volume GS such that a first region (region in the vicinity of the supply nozzle 74 within the chamber 55, see Figs. 3 and 7) within the cavity is formed, said first region being capable of holding a purging gas at a high pressure (via supply nozzles 74); and a flow barrier (walls of pellicle frame PF that face supply holes 76 and deflect the flow of gas around the pellicle frame PF, see Figs. 3 and 7) that keeps the flow of the purging gas within the first region at a high pressure as it enters the enclosed pellicle volume GS.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of Nakano [US 2002/0057425].

For claim 4, Aoki teaches the holding member (reticle loading arm, see [0154]) comprises a vacuum chuck (see [0154]), Aoki does not explicitly teach the vacuum chuck having a vacuum groove.

Nakano teaches a support member with a vacuum groove (see [0060])

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the vacuum groove as taught by Nakano in the holding member with vacuum chuck as taught by Aoki, because the vacuum groove could allow for applying the vacuum over a larger surface area of the reticle in order to maintain the reticle in position and reduce the likelihood of slippage.

7. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki in view of Kamono [US 2003/0150329].

For claims 24 and 25, Aoki teaches a purge device for actively purging a pellicle volume with a base having a cavity, but does not explicitly teach at least one plate within the cavity of said base and extending parallel with the pellicle such that said gap region is formed between a surface of said at least one plate and said pellicle, wherein said at least one plate includes a pressure balancing plate having a set of holes.

Kamono teaches at least one plate 28a within the cavity 39 of said base 36 and extending parallel with the pellicle 24 such that said gap region (space between plate 28a and pellicle 24, see Fig. 9A) is formed between a surface of said at least one plate 28a and said pellicle 24, wherein said at least one plate 28a includes a pressure balancing plate 28a having a set of holes (perforated, see Fig. 9A and [0074]).

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to incorporate the perforated plate as taught by Kamono in the purge device taught by Aoki, because the perforated plate could allow for providing a uniform gas over the surface of the pellicle, in order to maintain the flatness of the pellicle and reduce sag.

Allowable Subject Matter

8. Claims 14-17, 26-29 and 31-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: a purge device for actively purging a pellicle volume comprising; a flow barrier that keeps the flow of the purging gas within the first region before entering the pellicle volume, wherein said flow barrier comprises a non-contacting gas barrier or at least one plate within the cavity of said base and extending parallel with the pellicle such that said gap region is formed between a surface of said at least one plate and said pellicle, wherein said at least one plate includes a pressure balancing plate having a set of holes, wherein said base includes one or more dividing walls that extend within said

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cavity, or one or more support members having an adjustable height that extend within said cavity, to form a first plenum below said set of holes in said pressure balancing plate.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Matsuoka et al. [US 6,436,586], Sato [US 2002/0126269], Okada et al. [US 2003/003522], Shirasaki [US 6,593,034] and Powers [US 2004/0119965] teach a reticle and a pellicle connected by a pellicle frame.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Hunt Whitesell-Gordon whose telephone number is (571)270-3942. The examiner can normally be reached on Monday to Thursday, 9:00 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SHW/
9/9/2008

/Diane I Lee/
Supervisory Patent Examiner, Art Unit 2851